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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/734,699

12/12/2003

R. Todd Belt

RTB001US

2362

27906

7590

11/15/2005

PATENT LAW OFFICES OF DAVID MILLERS
6560 ASHFIELD COURT
SAN JOSE, CA 95120

EXAMINER

CHERRY, EUNCHA P

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/734,699

Applicant(s)

BELT, R. TODD

Examiner

EUNCHA P. CHERRY

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/6/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 23-31 are cancelled due to an election that was made **without** traverse in the reply filed on 10/19/05.
2. Applicant's election without traverse of Group I in the reply filed on 10/19/05 is acknowledged.

Claim Objections

3. Claim 14 is objected to because of the following informalities: the phrase "the frames" lacks proper antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-13 and 15-22 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0 718 658 A1.

EP 0 718 658 A1 discloses an actuator (Fig. 2) comprising:
a first region of piezoelectric material (285); a support
structure (212); flexures (180) attaching a perimeter of the

Art Unit: 2872

region to the support structure (see Fig. 2). The actuator further comprising first (245) and second (295) electrodes on opposite faces of the first region (285). The two of the flexures (more than one due to $M \times N$ array) provide respective electrical connections to the first and second electrodes (by 214). An actuator further comprising a second region of piezoelectric material (275); and a third electrode (235), wherein the second electrode is between the first and second regions (see 295 is in between 275 and 285), the first electrode (245) is on a side of the first region opposite to the second electrode, and the third electrode is on a side of the second region opposite to the second electrode (see Fig. 2). The electric field applied to the region causes crystal structure change in a plane of the region causing the region to dish, where in dishing provides a stroke of the actuator (column 4, lines 25-35), wherein the region is part of a bimorph (column 6, line 38), but can be considered as a unimorph when 275 and 285 are combined. The first side of the first region has piezoelectric properties that differ from piezoelectric properties of a second side of the first region (column 7, lines 20-33). The support structure comprises a substrate underlying the region (see 212). The substrate comprises electrically conductive traces that the flexures electrically connect to the

Art Unit: 2872

electrodes (214). The RAINBOW actuator as shown in Fig. 10 of the present invention is same shape as Fig. 2 of the prior art, thus the prior art meets this claim limitation.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 718 658 A1 in view of Kinsley (US 2,714,642).

EP 0 718 658 A1 discloses the claimed invention as set forth above except that the actuator array is in hexagonal shape and the frames are arranged in a hexagonal array. Kinsley discloses in column 2, lines 57-61, that the actuator array can be in any shape. It would have been obvious to one of ordinary skill in the art to make the actuator array and the frame to be in hexagonal shape as taught by Kinsley for the purpose of meeting the need of different shapes for the actuators.

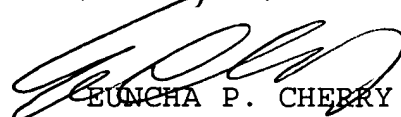
Conclusion

Art Unit: 2872

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EUNCHA P. CHERRY whose telephone number is 571-272-2310. The examiner can normally be reached on M-F 6:30-4:00, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DREW DUNN can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


EUNCHA P. CHERRY
Primary Examiner
Art Unit 2872

11/14/05